

# BME261 Experimental Biomedical Laboratory Skills

**Level:** 2

**Credit Units:** 5 Credit Units

**Language:** ENGLISH

**Presentation Pattern:** EVERY JULY

## Synopsis:

BME261 Experimental Biomedical Laboratory Skills equips students with the techniques and methods available to address experimental biomedical research. Focusing on common biomedical research techniques such as biomolecule extraction and interactions, nucleic acid extraction and analysis, and the latest mobile app tools available for research, students get a hands-on understanding of the technology and capabilities utilised in the latest biomedical research.

## Topics:

- Literature/database search for target genes
- Basic bioinformatics analysis of target genes
- Collection of samples for analysis
- Preparation of biological samples for nucleic extraction
- Performing PCR amplification
- Analysis of sequences and modeling
- Using common molecular enzymes
- Basic molecular manipulation
- Nucleic extraction from gel
- Nucleic acid extraction from PCR
- Nucleic acid extraction from samples
- Analysis of nucleic acids

## Learning Outcome:

- Explain PDB and experimental structure determination
- Discuss electrophoresis and sequencing
- Define cloning, restriction sites, TOPO, primer based cloning
- Identify competent cells and their functions
- Use relevant research-based search engines such as Pubmed and Google scholar, Smartphone apps
- Apply computational analysis (BLAST, DNA2App, ClustalW, Bioinformatics EXPASY, secondary structure prediction) and structural analysis for Mutations (for affinity maturation)

## Assessment Strategies (Evening Class):

Components	Description	Weightage Allocation (%)
Overall Continuous Assessment	PARTICIPATION 1	10
	LAB REPORT 1	20
Overall Examinable Components	ECA	70

<b>Total</b>	<b>100</b>
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